



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,764	10/24/2003	Yoshifumi Kachi	039.0023	2763
29453 7590 07/12/2007 JUDGE & MURAKAMI IP ASSOCIATES DOJIMIA BUILDING, 7TH FLOOR 6-8 NISHITEMMA 2-CHOME, KITA-KU OSAKA-SHI, 530-0047 JAPAN			EXAMINER SPEER, TIMOTHY M	
			ART UNIT 1775	PAPER NUMBER
			MAIL DATE 07/12/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/605,764	Applicant(s) KACHI ET AL.	
	Examiner Timothy M. Speer	Art Unit 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>02/13/07</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1, 2, 5, 6, 9, 10, 13, 14, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (JP 2002-134484, machine translation enclosed).**
3. Sato teaches a semiconductor substrate holding device (susceptor). The susceptor comprises a ceramic substrate having a wafer retaining face, a resistive heating element provided interiorly in the substrate and a recess formed in the wafer retaining face (see figures 3-5 and accompanying text). Sato fails to teach that the recess is contoured either so that the perimetric wall meets the bottom surface to form an angle of over 90° and 170° or less or so that the perimetric wall and bottom face join in a bottom-portion circumferential verge having a curvature of 0.1 mm or more.
4. Sato teaches, generally, that the device is configured such that the perimetric wall and the bottom surface form an angle and that the bottom portion may have a curvature (see figures 3-5).
5. Moreover, Sato teaches that the curvature may be varied depending on the diameter of the substrate being processed; showing that the curvature is a result effective variable (page 6, paragraph [0024] last sentence). Similarly, the angle is result effective and may be determined based on the substrate being processed.

Art Unit: 1775

5. It has been held that “where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”

See MPEP 2144.05 citing *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Thus, in the present case, since Sato teaches that the angle or curvature at which the perimetric wall and bottom surface meet is result effective, it is not considered inventive to discover optimum or workable ranges with respect to this parameter.

6. Regarding claims 2, 10, and 18, Sato teaches that the substrate may be formed of aluminum nitride (see page 5, paragraph [0018]). Therefore, to form the substrate of such a material would have been obvious to one having ordinary skill in the art, since Sato suggests such constructions.

7. With respect to claims 5, 6, 13, and 14, Sato teaches that a plasma discharge electrode may be formed superficially to the susceptor (page 5, paragraph [0021]). Therefore, to form such a construction would have been obvious to one having ordinary skill in the art, since Sato suggests such constructions.

8. In light of the above, instant claims 1, 2, 5, 6, 9, 10, 13, 14, 17, and 18 are considered to be prima facie obvious in view of Sato.

9. **Claims 3, 4, 7, 8, 11, 12, 15, 16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato in view of Soma (USPN 5,231,690).**

10. Sato was discussed above and fails to teach that the resistive heating element is formed of the materials set forth in instant claims 3, 4, 11, 12 19, and 20. Soma teaches that metals such as molybdenum, tungsten, platinum and the like are conventionally employed as resistive heating elements in ceramic susceptors (col. 5, lines 58-61, for instance). Therefore, it would have been

obvious to one having ordinary skill in the art to employ one of these metals in the resistive heating element of Sato, since Soma teaches that these metals are conventionally used for such resistive heating elements.

11. Regarding claims 7, 8, 15, and 16, as noted above, Sato teaches that a plasma discharge electrode may be formed superficially to the susceptor (page 5, paragraph [0021]). Therefore, to form such a construction would have been obvious to one having ordinary skill in the art, since Sato suggests such constructions.

12. Therefore, it is the Examiner's position that claims 3, 4, 7, 8, 11, 12, 15, 16, 19, and 20 are prima facie obvious in view of Sato in view of Soma.

13. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirotake (JP 2000-290773; machine translation enclosed) in view of Soma (USPN 5,231,690).

14. Hirotake teaches articles comprising a ceramic substrate comprising a wafer retaining face and a recess formed in the recess retaining face. Hirotake further teaches that the recess has a substantially planar bottom face. Moreover, Hirotake teaches that the angle at which the perimetric wall meets the bottom face is preferably greater than 60° or, in the case where the perimetric wall and the bottom face meet in a curve, the curve has a radius of greater than 0.5 mm (abstract, figure 1 and figure 2, for instance). These values overlap the values recited in the present claims. It has been held that “where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” See MPEP 2144.05 citing *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Thus, in the present case, since Hirotake teaches that the angle or curvature at

which the perimetric wall and bottom surface meet is result effective and may overlap the ranges presently claimed, it is not considered inventive to discover optimum or workable ranges with respect to this parameter.

15. Hirotake further teaches that the articles may be formed as a susceptor for installing a semiconductor wafer (page 6, paragraph [0027]), but fails to teach that the article includes a resistive heating element. Soma teaches that such constructions are conventional in the art for such susceptors (see col. 5, lines 58-61, for instance). Accordingly, it would have been obvious to one having ordinary skill in the art to include a resistive heating element in the article of Hirotake, since Hirotake teaches that the articles may be used as susceptors and Soma teaches that resistive heating elements are conventionally used in such susceptors.

16. Regarding claims 3, 4, 11, 12 19, and 20, Soma further teaches that metals such as molybdenum, tungsten, platinum and the like are conventionally employed as resistive heating elements in ceramic susceptors (col. 5, lines 58-61, for instance).

17. Regarding claims 2, 10, and 18, Hirotake teaches that the substrate may be formed of aluminum nitride, silicon nitride, or silicon carbide (see page 5, paragraph [0021]). Therefore, to form the substrate of such a material would have been obvious to one having ordinary skill in the art, since Hirotake suggests such constructions.

18. In light of the above, it is the Examiner's position that the present claims are prima facie obvious in view of the applied prior art.

Claim Objections

19. Claims 17-20 are objected to because of the following informalities: regarding new claims 17-20, at claim 17, line 4, it appears that the word "resisted" should be --resistive-- and the word "more" should be --or--. Appropriate correction is required.

Response to Arguments

20. Applicant's arguments filed 04/23/07 have been fully considered but they are not persuasive. In response to the rejections of Sato and Sato in view of Soma, applicant first argues that Sato fails to teach articles having a "substantially planar bottom face." This is not persuasive. Figure 4 of Sato clearly shows that the bottom face of the susceptor is "substantially planar," as presently claimed. Additionally, applicant argues that Sato teaches away from susceptors having a planar bottom surface. This is not persuasive, since, again, figure 4 of Sato shows that the bottom face of the susceptor is "substantially planar."

21. Next, applicant argues the intended use of the article, asserting that Sato fails to teach that the semiconductor substrate contacts the bottom face across the entire diameter of the substrate. This limitation is not presently claimed, since applicant is not claiming the use of the article and, moreover, since the article of Sato has the same structure as recited in the present claims, it could be used in this manner. A new use of an old article does not impart patentability to the old article.

22. Finally, applicant argues that the present claims distinguish over Sato because Sato has a different motivation for forming the disclosed structure. This is not persuasive, since the prior art need not have the same motivation as applicant.

23. In light of the above, applicant's arguments have been considered, but are not found to be persuasive.

Conclusion

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

25. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

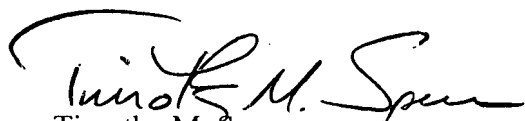
26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy M. Speer whose telephone number is 571-272-8385. The examiner can normally be reached on M-Th, M-F.

27. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


28. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

Art Unit: 1775

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Timothy M. Speer



JENNIFER C. MCNEIL
SUPERVISORY PATENT EXAMINER
7/9/12